



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,521	10/06/2003	Jay Yu	VIAP0086USA	2520

27765 7590 07/05/2005

NORTH AMERICA INTERNATIONAL PATENT OFFICE (NAIPC)  
P.O. BOX 506  
MERRIFIELD, VA 22116

EXAMINER

NADAV, ORI

ART UNIT PAPER NUMBER

2811

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/605,521

Applicant(s)

YU ET AL

Examiner

Ori Nadav

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 9-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 9-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dhong et al. (6,060,759) or Ahn et al. (6,531,945) in view Gardner (6,452,247).

Dhong teaches in figure 3A and related text a printed circuit inductor of a printed circuit board with at least a first layer and a second layer comprising:

- a first conductive trace 308 formed on a first layer;

- a second conductive trace 310 formed on a second layer, wherein the second layer is disposed below and parallel to the first layer, the layers being separated by an insulating material;

- a third conductive trace 308 formed on the first layer and parallel to the first conductive trace;

- a fourth conductive trace 310 formed on the second layer and parallel to the second conductive trace;

- a first via plug 312 directly connected to a first end of the first conductive trace and a first end of the second conductive trace;

Art Unit: 2811

a second via plug directly connected to a second end of the second conductive trace and a first end of the third conductive trace; and

a third via plug directly connected to a second end of the third conductive trace and a first end of the fourth conductive trace,

wherein the first conductive trace is electrically connected to the fourth conductive trace through the first via plug, the second conductive trace, the second via plug, the third conductive trace and the third via plug, with no intervening connections.

Ahn et al. teach in figure 1A and related text a printed circuit inductor of a printed circuit board with at least a first layer and a second layer comprising:

a first conductive trace 220 formed on a first layer;

a second conductive trace 220 formed on a second layer, wherein the second layer is disposed below and parallel to the first layer, the layers being separated by an insulating material;

a third conductive trace formed on the first layer and parallel to the first conductive trace;

a fourth conductive trace formed on the second layer and parallel to the second conductive trace;

a first via plug 140 directly connected to a first end of the first conductive trace and a first end of the second conductive trace;

a second via plug directly connected to a second end of the second conductive trace and a first end of the third conductive trace; and

Art Unit: 2811

a third via plug directly connected to a second end of the third conductive trace and a first end of the fourth conductive trace,

wherein the first conductive trace is electrically connected to the fourth conductive trace through the first via plug, the second conductive trace, the second via plug, the third conductive trace and the third via plug, with no intervening connections. Dhong et al. and Ahn et al. do not state that the device is formed on a printed circuit board.

Gardner teaches in figure 1 forming an inductor on a printed circuit board 10

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form Dhong et al. and Ahn et al.'s device on a printed circuit board in order to use the device in practical application.

Regarding claim 2, Dhong et al. and Ahn et al. teach the first via plug is perpendicular to the first conductive trace, the second via plug is perpendicular to the second conductive trace, and the third via plug is perpendicular to the third conductive trace.

Regarding claims 10-12, Dhong et al. and Ahn et al. teach an angle formed in the plane of the first layer between a vector from the third via plug to the first via plug and a vector from the third via plug to the second via plug is substantially a right angle, acute angle and obtuse angle, depending on the selected via plugs.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-2 and 9-12 have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 2811

**Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References C-F are cited as being related to 3-D inductors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ori Nadav whose telephone number is 571-272-1660. The examiner can normally be reached between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Loke can be reached on 571-272-1657. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



O.N.  
6/27/05

ORI NADAV  
PRIMARY EXAMINER  
TECHNOLOGY CENTER 2800